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2009 MICHIGAN SPRING TURKEY HUNTER SURVEY

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ABSTRACT

A survey of turkey hunters was conducted following the 2009 spring hunting season to determine turkey harvest and hunter participation. In 2009, nearly 98,000 hunters harvested about 40,000 turkeys. Statewide, 41% of hunters harvested a turkey. Nearly 64% of the hunters rated their hunting experience as excellent, very good, or good in 2009. About 89% of the hunters reported they experienced no or only minor interference from other hunters. The number of hunters and their harvest were not significantly different between 2008 and 2009; however, hunter success and hunter satisfaction declined significantly.

INTRODUCTION

Michigan's spring turkey (*Meleagris gallopavo*) hunting season was based originally on an area and quota system. This system was set up primarily to distribute hunters across geographic areas (management units) and time (hunt periods). As the turkey population has expanded statewide, license types were created that allowed hunters to hunt in multiple management units. The goal of the current system has been to provide hunting opportunities while maintaining acceptable levels of hunter satisfaction (Luukkonen 1998).

In 2009, 80% of the state (48,147 square miles) was open for wild turkey hunting from April 20 through May 31 (Figure 1). The area open for turkey hunting was the same as in 2008. The hunting area was divided into 12 management units (Figure 1). Hunting licenses were available on these management units for three types of hunts: (1) quota [limited licenses available] hunts on both public and private lands in a specific management unit, (2) quota hunt on private lands in southern Michigan [Hunt 301 in Unit ZZ], and (3) a guaranteed hunt (no quota) that included all units [Hunt 234].



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People interested in obtaining a turkey hunting license could enter into a random drawing (lottery) conducted by the Department of Natural Resources and Environment (DNRE) or purchase a license for Hunt 234 between January 1 and February 1 without going through the lottery. Each applicant in the lottery could select up to two hunt choices (any combination of quota and unlimited quota hunts). The lottery consisted of two drawings. The first drawing was used to select applicants based on their preferred hunt choice. The second drawing was among applicants who were not successful in the first drawing, and was based on the hunter's second choice for a hunt. Any licenses available after the drawing was completed were made available on a first-come, first-served basis to applicants that were unsuccessful in the drawing. Unsuccessful applicants could purchase one leftover license or a license for Hunt 234. Beginning one week after licenses were available to unsuccessful applicants, all remaining licenses except licenses for Hunt 234 were made available to nonapplicants. Hunters were allowed to purchase one license and take one bearded turkey with the harvest tag issued with their license.

A limited number of licenses were available for quota hunts, and they were valid only in a certain management unit and only during a limited time period (7-28 days). Most quota hunts began before May 4 and lasted for seven days. A private land management unit (Unit ZZ) was created in 2002 that included all private lands in southern Michigan (Figure 1). Hunters who selected Hunt 301 could hunt the first two weeks of the season (April 20-May 3) anywhere on private lands in Unit ZZ. This unit and hunt period was created to provide additional hunting opportunity and increased flexibility for hunters who had difficulty finding time to hunt during shorter quota hunts.

Licenses for Hunt 234 could be used in any management unit. They were valid on public and private lands, except in Unit ZZ, where they were only valid on private lands or on Fort Custer military lands. Hunt 234 started later than most quota hunts but lasted for 28 days (May 4-31). An unlimited number of licenses were available for Hunt 234.

The DNRE and the Natural Resources Commission have the authority and responsibility to protect and manage the wildlife resources of the state of Michigan. Harvest surveys are a management tool used by the Wildlife Division to accomplish its statutory responsibility. Estimating harvest, hunting effort, and hunter satisfaction are the primary objectives of this survey.

METHODS

The Wildlife Division provided all hunters the option to report voluntarily information about their turkey hunting activity via the internet. This option was advertised in the hunting regulation booklet and through a statewide news release. Hunters could report information anytime during the hunting season. Hunters reported whether they hunted, the days spent afield, whether they harvested a turkey, and whether other hunters caused interference during their hunt (none, minor, some irritation, or major problem). Successful hunters were also asked to report where their turkeys were taken (public or private land), date of harvest, and beard length of the harvested bird. Birds with a beard less than six inches were classified as juveniles (one year old), while birds with longer

beards were adults (two years old or greater; Kelly, 1975). Finally, hunters rated their overall hunting experience (excellent, very good, good, fair, or poor).

Following the 2009 spring turkey hunting season, a questionnaire was sent to 11,099 randomly selected people that had purchased a turkey hunting license (resident turkey, senior resident turkey, and nonresident turkey licenses) and had not already voluntarily reported harvest information via the internet. Hunters receiving the questionnaire were asked to report the same information that was collected from hunters that reported voluntarily on the internet.

Estimates were calculated using a stratified random sampling design that included 15 strata (Cochran 1977). Hunters were stratified based on the management unit where their license was valid (12 management units). Hunters who purchased a license that could be used in multiple management units (hunts 234 and 301) were treated as separate strata (strata 13 and 14). Moreover, people that had voluntarily reported information about their hunting activity via the internet were treated as a separate stratum (fifteenth stratum).

A 95% confidence limit (CL) was calculated for each estimate. This CL could be added to and subtracted from the estimate to calculate the 95% confidence interval. The confidence interval was a measure of the precision associated with the estimate and implies the true value would be within this interval 95 times out of 100. Estimates were based on information collected from random samples of hunting license buyers. Thus, these estimates were subject to sampling errors (Cochran 1977). Estimates were not adjusted for possible response or nonresponse biases.

Statistical tests are used routinely to determine the likelihood that differences among estimates are larger than expected by chance alone. The overlap of 95% confidence intervals was used to determine whether estimates differed. Non-overlapping 95% confidence intervals was equivalent to stating the difference between the means was larger than would be expected 995 out of 1,000 times ($P < 0.005$), if the study had been repeated (Payton et al. 2003).

Questionnaires were mailed initially during mid-July 2009, and nonrespondents were mailed up to two follow-up questionnaires. Although 11,099 people were sent the questionnaire, 93 surveys were undeliverable resulting in an adjusted sample size of 11,006. Questionnaires were returned by 7,325 people, yielding a 67% adjusted response rate. In addition, 6,268 people voluntarily reported information about their hunting activity via the internet before the random sample was selected.

RESULTS AND DISCUSSION

In 2009, licenses were purchased by 120,773 people, an increase of 3% from 2008 (Table 1). Most of the people buying a license were men (93%), and the average age of the license buyers was 44 years (Figure 2). Nearly 9% (11,227) of the license buyers were younger than 17 years old.

About 81% ($\pm 1\%$) of license buyers hunted turkeys (97,956 hunters). Most of these hunters were men ($91,186 \pm 1,122$), although nearly 7% ($\pm 1\%$) of the hunters were women ($6,770 \pm 611$). Hunter numbers (Table 2) were nearly unchanged from 2008. Counties listed in descending order with more than 2,500 hunters afield included Kent, Allegan, Newaygo, Montcalm, Tuscola, Lapeer, and Jackson (Table 3).

Hunters spent an estimated 450,163 days afield pursuing turkeys (4.6 ± 0.1 days/hunter), and harvested approximately 39,733 birds (Figure 3). Counties listed in descending order with hunters taking more than 1,000 turkeys included Allegan, Kent, Montcalm, Newaygo, Lapeer, Jackson, Saginaw, Calhoun, Sanilac, and Tuscola (Table 3). Hunter effort increased significantly by 10% from 2008, but statewide harvest was not significantly different from 2008. Hunter success was 41% in 2009, compared to 43% hunter success in 2008.

About 24% ($\pm 2\%$) of the harvested birds were juvenile males ($9,397 \pm 705$); 75% ($\pm 2\%$) were adult males ($29,642 \pm 1,125$), and about 1% were bearded females (405 ± 150). Additionally, the age of a small number of harvested birds ($< 1\%$) was unknown (289 ± 131) because hunters failed to report a beard length.

Hunting effort and the number of turkeys harvested were generally highest during the earliest hunting periods (Figures 4-7). For turkeys that the harvest date was known, 42% of these birds were taken during the first seven days (April 20-26). Daily hunter success generally was more than 8% during April 20 through May 4. Daily hunter success was generally below 8% during May 5-24, but generally increased to over 8% during May 25-31. Hunting effort and harvest generally was greater on the weekends than weekdays, especially on Saturdays.

About 81% of turkey hunters hunted solely on private land; 13% hunted on public land only; and 5% hunted on both private and public lands (Table 4). Of the 39,733 turkeys harvested in 2009, $90 \pm 1\%$ were taken on private land ($35,787 \pm 1,186$ birds). About $10 \pm 1\%$ of the harvest ($3,931 \pm 444$ birds) was taken on public land.

Hunter satisfaction is one measure used to assess the turkey management program in Michigan. Of the estimated 97,956 people hunting turkeys in 2009, $64 \pm 1\%$ of the hunters rated their hunting experience as either excellent ($18,142 \pm 932$ hunters), very good ($19,513 \pm 959$), or good ($25,249 \pm 1,072$) (Table 5). Nearly $19 \pm 1\%$ of the hunters rated their experience as fair ($18,985 \pm 956$ hunters). Only $14 \pm 1\%$ of the hunters rated their experience as poor ($13,975 \pm 825$ hunters). About 2% of the hunters ($2,092 \pm 354$ hunters) failed to rate their hunting experience.

Hunter satisfaction is affected by many factors such as hunting success and whether hunting activities were completed without interference (Luukkonen 1998). In 2009, $69 \pm 1\%$ of the hunters reported no hunter interference; $20 \pm 1\%$ reported minor interference; $7 \pm 1\%$ reported some irritation caused by hunter interference; and $2 \pm 1\%$ reported hunter interference was a major problem (Table 6).

Although interference can affect hunter satisfaction, hunter satisfaction was more closely associated with hunter success (Figures 8 and 9). Hunter success was greater

than 35% in all hunt periods, and hunter success and satisfaction varied little among the hunt periods (Table 7).

Compared to 2008, hunter numbers, hunter effort, and harvest did not change significantly statewide in 2009 (Table 8). However, hunter success and satisfaction declined significantly in 2009 (Table 9). Most of the declines noted statewide between years were as a result of changes in the northern Lower Peninsula (NLP). In the NLP, hunter numbers, harvest, hunter success, and hunter satisfaction declined significantly in 2009 (Tables 8-9).

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Table 1. Number of hunting licenses available and people applying for licenses during the 2009 Michigan spring turkey hunting season.

Management unit or hunt period	Licenses available (quota)	Number of eligible applicants ^a	Number of applicants successful in drawing ^b	Number of licenses remaining after drawing	Number of licenses purchased by successful applicants ^c	Number of leftover licenses purchased by unsuccessful applicants ^c	Number of licenses purchased by people not in the drawing ^c	Number of licensees ^c
A	5,500	3,842	3,914	1,586	2,863	21	1,269	4,153
E	1,700	2,422	1,702	0	1,282	0	0	1,282
F	5,000	5,132	4,848	152	3,596	39	94	3,729
J	4,000	2,463	2,501	1,499	1,878	19	996	2,893
K	8,500	12,356	8,503	0	6,674	0	0	6,674
M	8,000	2,408	2,422	5,578	1,914	4	3,410	5,328
ZA	4,800	3,541	3,368	1,432	2,416	37	1,199	3,652
ZB	1,750	1,661	1,290	460	962	65	325	1,352
ZC	2,000	2,317	1,552	448	1,042	106	275	1,423
ZD	40	104	40	0	24	0	0	24
ZE	2,000	2,861	1,741	259	1,221	144	84	1,449
ZF	5,600	3,668	3,551	2,049	2,759	40	1,779	4,578
Hunt 301	65,000	21,041	21,531	43,469	18,012	696	24,951	43,659
Hunt 234	NA	1,042	1,664	NA	1,354	1,912	37,311 ^d	40,577
Statewide	113,890	64,858	58,627	56,932	45,997	3,083	71,693	120,773

^aNumber of eligible applicants selecting the management unit as their first choice to hunt.

^bNumber of successful applicants was sometimes larger than quota because of system processing errors.

^cIf a licensee purchased more than one license, only the latest purchase is included in the summary of licenses purchased.

^dLicenses sold between January 1 and February 1.

Table 2. Number of hunters, hunting efforts, harvest, hunter success, hunter satisfaction, and hunter interference during the spring 2009 Michigan turkey hunting season.

Management unit	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b		Noninterfered hunters ^c	
	Total	95% CL	Total	95% CL	Total	95% CL	%	95% CL	%	95% CL	%	95% CL
Hunt periods with quotas (General limited quota hunt periods)												
A	3,343	196	14,704	1,685	876	197	26	6	43	6	85	5
E	1,127	47	3,754	284	387	65	34	6	61	6	94	3
F	3,457	110	13,848	1,051	863	174	25	5	41	6	88	4
J	2,442	127	9,052	810	614	139	25	6	47	6	91	4
K	6,239	189	22,662	1,601	2,388	358	38	6	57	6	92	3
M	4,191	272	21,520	2,844	1,747	306	42	7	63	7	96	3
ZA	3,069	166	12,292	1,440	1,066	202	35	6	64	6	89	4
ZB	1,135	63	4,452	529	322	71	28	6	63	7	89	4
ZC	1,157	70	4,513	581	429	80	37	7	60	7	82	5
ZD	18	3	62	18	6	3	36	18	64	18	100	0
ZE	1,284	55	5,405	534	378	73	29	6	69	6	84	5
ZF	3,923	200	21,197	2,989	1,681	271	43	7	71	6	83	5
Subtotal	31,384	508	133,461	5,220	10,756	667	34	2	57	2	89	1
Hunt period 301 with quota (Private lands in Management Unit ZZ; April 20-May 3, 2009)												
ZA	9,675	683	37,262	3,495	5,174	530	53	4	72	4	90	2
ZB	3,759	462	16,158	2,629	1,815	329	48	6	68	6	84	5
ZC	4,627	504	18,788	2,511	2,029	341	44	6	72	5	88	4
ZD	314	140	1,302	652	93	76	29	20	66	21	94	11
ZE	10,159	696	41,928	3,719	4,565	501	45	4	71	4	86	3
ZF	8,531	653	35,447	3,573	3,914	468	46	4	72	4	89	3
Unknown	423	163	1,308	590	92	76	22	16	57	19	87	13
Subtotal	36,670	612	152,194	5,307	17,681	808	48	2	71	2	88	1

^aNumber of hunters does not add up to statewide total because hunters can hunt in more than one unit for hunts 234 and 301. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as excellent, very good, or good.

^cProportion of hunters that indicated they experienced no or only minor interference from other hunters.

Table 2 (continued). Number of hunters, hunting efforts, harvest, hunter success, hunter satisfaction, and hunter interference during the spring 2009 Michigan turkey hunting season.

Management unit	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b		Noninterfered hunters ^c	
	Total	95% CL	Total	95% CL	Total	95% CL	%	95% CL	%	95% CL	%	95% CL
Unlimited quota hunt period (Guaranteed Hunt 234; May 4-31, 2009)												
A	949	216	4,732	1,480	173	94	18	9	38	11	92	6
E	2,014	313	9,846	2,079	598	173	30	7	51	8	92	4
F	2,035	309	11,261	2,325	306	123	15	6	37	8	92	4
J	1,110	228	6,640	2,312	333	126	30	10	52	10	93	5
K	7,508	553	39,595	4,357	2,419	334	32	4	57	4	89	3
M	477	154	2,358	903	133	80	28	14	67	15	93	8
ZA	5,529	492	29,160	3,775	2,471	342	45	5	74	4	92	3
ZB	1,824	299	8,636	1,949	584	171	32	8	73	7	93	4
ZC	2,398	336	11,619	2,181	953	215	40	7	62	7	87	5
ZD	144	85	608	407	49	49	34	28	77	24	99	0
ZE	4,095	428	20,099	2,951	1,899	300	46	5	76	5	92	3
ZF	3,515	401	17,963	2,794	1,313	249	37	6	70	5	92	3
Unknown	390	138	1,990	1,089	65	56	17	13	29	16	80	14
Subtotal	29,902	637	164,508	7,216	11,296	638	38	2	63	2	91	1
Statewide	97,956	1,019	450,163	10,367	39,733	1,227	41	1	64	1	89	1

^aNumber of hunters does not add up to statewide total because hunters can hunt in more than one unit for hunts 234 and 301. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as excellent, very good, or good.

^cProportion of hunters that indicated they experienced no or only minor interference from other hunters.

Table 3. Estimated number of hunters, hunting effort, harvest, hunter success, hunter satisfaction, and hunter interference during the 2009 Michigan spring turkey hunting season. Estimates combined quota and unlimited quota hunts in each county.

County	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b		Noninterfered hunters ^c	
	95%		95%		95%		95%		95%		95%	
	Total	CL	Total	CL	Total	CL	%	CL	%	CL	%	CL
Alcona	1,816	288	7,886	1,723	497	158	27	8	44	8	89	6
Alger	309	151	1,689	1,090	99	87	32	23	68	23	100	0
Allegan	3,261	422	14,336	2,460	1,477	295	45	7	74	6	86	5
Alpena	1,338	248	5,341	1,214	382	142	29	9	48	10	91	6
Antrim	949	186	3,604	1,011	271	103	29	9	55	11	93	6
Arenac	696	171	3,329	1,104	252	97	36	12	60	12	93	7
Baraga	23	44	23	44	23	44	100	0	100	0	100	0
Barry	2,078	344	9,384	2,029	742	208	36	8	66	8	84	6
Bay	412	151	1,696	737	191	104	46	18	71	17	84	14
Benzie	546	195	2,315	1,021	124	98	23	16	54	18	93	10
Berrien	1,076	252	3,920	1,105	379	150	35	11	67	11	86	8
Branch	1,021	240	4,361	1,340	467	162	46	12	76	10	94	5
Calhoun	2,366	365	10,136	1,968	1,071	247	45	8	76	7	91	5
Cass	1,360	285	6,856	1,840	566	185	42	10	73	10	89	7
Charlevoix	485	137	1,760	650	197	89	41	14	55	15	94	7
Cheboygan	871	179	4,447	1,906	179	89	20	9	44	11	82	9
Chippewa ^d	0	0	0	0	0	0	0	0	0	0	0	0
Clare	1,310	215	5,426	1,278	363	108	28	7	49	8	95	4
Clinton	1,671	310	7,331	1,779	726	206	43	9	69	9	93	5
Crawford	872	190	3,342	833	129	74	15	8	35	11	84	8
Delta	1,044	257	4,181	1,297	493	186	47	13	72	12	93	7

^aNumber of hunters does not add up to statewide total because hunters can hunt in more than one county. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as excellent, very good, or good.

^cProportion of hunters that indicated they experienced no or only minor interference from other hunters.

^dNot open for turkey hunting.

Table 3 (continued). Estimated number of hunters, hunting effort, harvest, hunter success, hunter satisfaction, and hunter interference during the 2009 Michigan spring turkey hunting season. Estimates combined quota and unlimited quota hunts in each county.

County	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b		Noninterfered hunters ^c	
	Total	95% CL	Total	95% CL	Total	95% CL	%	95% CL	%	95% CL	%	95% CL
Dickinson	1,028	259	4,666	1,737	435	179	42	14	65	13	97	4
Eaton	1,876	326	7,923	1,753	779	213	42	9	68	8	90	5
Emmet	540	145	1,674	490	149	78	28	12	54	14	90	9
Genesee	1,666	299	7,139	1,548	651	188	39	9	72	8	88	6
Gladwin	1,117	197	4,537	1,153	369	120	33	9	58	9	90	6
Gogebic	0	0	0	0	0	0	0	0	0	0	0	0
Gd. Traverse	775	217	3,407	1,342	181	100	23	12	52	14	90	8
Gratiot	1,633	297	6,606	1,496	884	225	54	9	75	8	87	6
Hillsdale	1,844	320	7,670	1,686	886	225	48	9	76	8	82	7
Houghton	23	44	69	132	0	0	0	0	0	0	100	0
Huron	1,460	265	5,925	1,533	600	180	41	9	66	9	94	4
Ingham	1,735	305	6,978	1,595	796	208	46	9	70	8	83	7
Ionia	1,684	305	6,128	1,566	791	212	47	9	73	8	89	6
Iosco	1,001	205	4,245	1,199	252	106	25	9	43	11	97	4
Iron	666	215	4,199	1,790	176	115	27	15	48	17	96	6
Isabella	1,594	296	6,421	1,502	693	196	43	9	67	9	93	5
Jackson	2,656	371	11,586	2,197	1,185	254	45	7	74	6	89	4
Kalamazoo	1,559	303	5,776	1,364	694	202	45	10	75	8	91	6
Kalkaska	783	222	3,089	1,211	189	116	24	13	52	14	89	9
Kent	3,426	429	12,194	1,908	1,443	282	42	6	73	6	90	4
Keweenaw ^d	0	0	0	0	0	0	0	0	0	0	0	0

^aNumber of hunters does not add up to statewide total because hunters can hunt in more than one county. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as excellent, very good, or good.

^cProportion of hunters that indicated they experienced no or only minor interference from other hunters.

^dNot open for turkey hunting.

Table 3 (continued). Estimated number of hunters, hunting effort, harvest, hunter success, hunter satisfaction, and hunter interference during the 2009 Michigan spring turkey hunting season. Estimates combined quota and unlimited quota hunts in each county.

County	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b		Noninterfered hunters ^c	
	Total	95% CL	Total	95% CL	Total	95% CL	%	95% CL	%	95% CL	%	95% CL
Lake	1,518	306	6,534	1,805	316	143	21	8	43	10	90	6
Lapeer	2,660	368	10,977	1,967	1,234	253	46	7	70	6	86	5
Leelanau	510	188	2,196	951	110	83	22	15	33	18	81	15
Lenawee	1,001	233	4,198	1,239	323	132	32	11	66	11	84	9
Livingston	1,821	303	6,916	1,466	773	201	42	8	80	7	88	6
Luce ^d	0	0	0	0	0	0	0	0	0	0	0	0
Mackinac	12	23	75	140	0	0	0	0	0	0	100	0
Macomb	531	166	2,203	868	130	78	24	13	54	16	79	13
Manistee	868	229	4,161	1,441	191	107	22	11	48	13	91	7
Marquette	428	179	1,877	879	147	106	34	21	56	22	100	0
Mason	761	215	2,885	973	278	137	37	14	55	14	89	10
Mecosta	1,670	315	7,281	1,860	772	221	46	10	73	8	86	7
Menominee	1,204	273	5,821	1,618	482	181	40	12	67	12	95	5
Midland	1,285	265	6,210	1,688	586	181	46	10	71	9	93	5
Missaukee	647	198	2,757	1,082	117	79	18	11	35	14	100	0
Monroe	319	132	1,372	646	112	79	35	20	65	20	100	0
Montcalm	2,847	396	13,074	2,391	1,432	285	50	7	71	6	89	4
Montmorency	963	213	4,441	1,360	176	97	18	9	33	11	81	10
Muskegon	1,674	310	7,602	1,767	599	186	36	9	64	9	86	7
Newaygo	3,188	424	13,154	2,381	1,312	284	41	7	63	7	89	4
Oakland	1,226	221	4,982	1,178	509	152	41	9	73	8	92	5

^aNumber of hunters does not add up to statewide total because hunters can hunt in more than one county. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as excellent, very good, or good.

^cProportion of hunters that indicated they experienced no or only minor interference from other hunters.

^dNot open for turkey hunting.

Table 3 (continued). Estimated number of hunters, hunting effort, harvest, hunter success, hunter satisfaction, and hunter interference during the 2009 Michigan spring turkey hunting season. Estimates combined quota and unlimited quota hunts in each county.

County	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b		Noninterfered hunters ^c	
	Total	95% CL	Total	95% CL	Total	95% CL	%	95% CL	%	95% CL	%	95% CL
Oceana	1,376	288	6,485	1,922	531	182	39	10	66	10	90	6
Ogemaw	1,174	220	4,887	1,100	133	74	11	6	37	10	88	6
Ontonagon	23	44	23	44	0	0	0	0	0	0	100	0
Osceola	894	235	2,866	837	276	134	31	13	57	13	93	8
Oscoda	1,145	220	4,929	1,300	140	80	12	7	35	10	88	7
Otsego	723	170	3,475	1,164	140	77	19	10	38	12	96	5
Ottawa	2,445	379	9,347	1,923	878	228	36	8	71	7	89	5
Presque Isle	849	199	4,017	1,329	234	111	28	11	48	13	91	7
Roscommon	954	198	3,672	973	233	101	24	9	38	11	78	9
Saginaw	2,304	356	9,296	1,868	1,092	249	47	8	67	7	92	4
St. Clair	2,153	337	9,138	1,799	887	218	41	8	66	8	86	5
St. Joseph	1,104	257	6,527	1,941	597	191	54	12	85	8	95	5
Sanilac	2,494	362	11,580	2,306	1,069	244	43	7	71	7	87	5
Schoolcraft	128	96	591	483	1	0	1	1	49	38	99	1
Shiawassee	1,601	300	7,761	2,137	806	216	50	10	77	8	87	6
Tuscola	2,782	367	11,111	1,849	1,037	233	37	7	68	6	85	5
Van Buren	1,906	336	8,827	2,505	971	242	51	9	76	8	91	5
Washtenaw	1,484	260	6,226	1,371	548	168	37	9	66	9	88	6
Wayne	100	77	466	394	34	44	34	36	100	0	100	0
Wexford	1,152	273	4,216	1,181	407	169	35	12	60	12	93	6
Unknown	3,035	413	14,411	2,732	337	136	11	4	44	7	84	5

^aNumber of hunters does not add up to statewide total because hunters can hunt in more than one county. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as excellent, very good, or good.

^cProportion of hunters that indicated they experienced no or only minor interference from other hunters.

^dNot open for turkey hunting.

Table 4. Estimated number and proportion of hunters hunting on private and public lands during the spring 2009 Michigan turkey hunting season.^a

Management unit	Private land only				Public land only				Both private and public lands				Unknown land			
	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL
Hunt periods with quotas (General limited quota hunt periods)																
A	2,434	240	73	6	611	170	18	5	265	120	8	4	34	45	1	1
E	726	70	64	6	327	61	29	5	74	33	7	3	0	0	0	0
F	1,473	202	43	6	1,556	203	45	6	373	124	11	4	55	52	2	2
J	1,399	172	57	6	740	150	30	6	254	97	10	4	50	46	2	2
K	3,562	374	57	6	1,718	327	28	5	910	260	15	4	49	67	1	1
M	2,882	327	69	6	917	247	22	6	370	165	9	4	23	44	1	1
ZA	1,721	224	56	7	1,039	200	34	6	276	117	9	4	32	43	1	1
ZB	433	79	38	7	612	84	54	7	63	36	6	3	27	24	2	2
ZC	540	85	47	7	485	83	42	7	124	49	11	4	7	13	1	1
ZD	13	4	73	17	5	3	27	17	0	0	0	0	0	0	0	0
ZE	426	77	33	6	729	84	57	6	128	48	10	4	0	0	0	0
ZF	2,083	281	53	7	1,532	265	39	6	287	134	7	3	20	38	1	1
Subtotal	17,691	727	56	2	10,271	629	33	2	3,125	416	10	1	297	132	1	0
Hunt 301 with quota (Private lands in Management Unit ZZ; April 20-May 3, 2009)																
ZA	9,675	683	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZB	3,759	462	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZC	4,627	504	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZD	314	140	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZE	10,159	696	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZF	8,531	653	100	0	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	423	163	100	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	36,670	612	100	0	0	0	0	0	0	0	0	0	0	0	0	0

^aRow totals may not equal 100% because of rounding errors.

Table 4 (continued). Estimated number and proportion of hunters hunting on private and public lands during the spring 2009 Michigan turkey hunting season.^a

Management unit	Private land only				Public land only				Both private and public lands				Unknown land			
	Total	95% CL	95% %	95% CL	Total	95% CL	95% %	95% CL	Total	95% CL	95% %	95% CL	Total	95% CL	95% %	95% CL
Unlimited quota hunt period (Guaranteed Hunt 234; May 4-31, 2009)																
A	777	198	82	9	140	80	15	8	32	40	3	4	0	0	0	0
E	1,572	278	78	7	332	129	17	6	95	69	5	3	15	28	1	1
F	802	198	39	8	848	200	42	8	370	138	18	6	15	28	1	1
J	674	179	61	10	276	113	25	9	145	85	13	7	15	28	1	3
K	5,247	478	70	4	1,434	260	19	3	722	188	10	2	104	75	1	1
M	300	123	63	16	127	80	27	14	50	49	10	10	0	0	0	0
ZA ^b	5,529	492	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZB ^b	1,824	299	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZC ^b	2,398	336	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZD ^b	144	85	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZE ^b	4,095	428	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZF ^b	3,515	401	100	0	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	304	123	78	14	40	40	10	10	2	0	1	0	45	49	11	12
Subtotal	25,328	696	85	1	2,538	340	8	1	1,843	296	6	1	194	102	1	0
Statewide ^c	79,688	1,178	81	1	12,809	715	13	1	4,968	511	5	1	491	166	1	0

^aRow totals may not equal 100% because of rounding errors.

^bLicenses for the unlimited quota hunt were valid only on private lands in Management Unit ZZ in southern Michigan (Figure 1).

^cNumber of hunters does not add up to statewide total because hunters can hunt in more than one unit for the unlimited quota hunts.

Table 5. How hunters rated their hunting experience during the spring 2009 Michigan turkey hunting season.

Management unit	Satisfaction level (% of hunters) ^a					
	Excellent	Very good	Good	Fair	Poor	No answer
Hunt periods with quotas (General limited quota hunt periods)						
A	9	14	20	20	35	2
E	11	19	32	23	16	0
F	9	13	19	27	32	0
J	11	12	23	23	28	3
K	14	13	30	21	19	2
M	17	20	25	21	16	1
ZA	19	17	28	22	14	1
ZB	11	27	26	22	13	2
ZC	21	23	16	26	11	3
ZD	18	36	9	27	0	9
ZE	17	22	30	18	12	2
ZF	21	20	29	18	9	3
Mean	15	17	26	21	20	2
Hunt 301 with quota (Private lands in Management Unit ZZ; April 20-May 3, 2009)						
ZA	23	27	22	17	9	2
ZB	21	23	23	19	11	3
ZC	22	21	29	13	11	4
ZD	30	12	23	17	17	0
ZE	24	20	27	17	10	2
ZF	23	22	28	17	8	2
Unknown	9	22	26	17	21	4
Mean	23	23	26	17	9	2

^aRow totals may not equal 100% because of rounding errors.

Table 5 (continued). How hunters rated their hunting experience during the spring 2009 Michigan turkey hunting season.

Management unit	Satisfaction level (% of hunters) ^a					
	Excellent	Very good	Good	Fair	Poor	No answer
Unlimited quota hunt period (Guaranteed Hunt 234; May 4-31, 2009)						
A	8	5	25	24	35	3
E	11	17	23	22	25	2
F	4	8	26	31	32	1
J	19	17	17	23	24	1
K	15	16	25	24	16	3
M	16	18	33	20	14	0
ZA	19	26	29	16	7	2
ZB	17	23	33	14	11	2
ZC	20	22	21	25	12	1
ZD	1	32	44	12	11	0
ZE	26	23	27	17	7	0
ZF	15	23	32	19	7	4
Unknown	1	12	17	24	42	4
Mean	17	20	26	20	14	2
Statewide ^b	19	20	26	19	14	2

^aRow totals may not equal 100% because of rounding errors.

^bStatewide mean satisfaction levels (all hunts and periods).

Table 6. Estimated amount of hunter interference experienced by turkey hunters during the spring 2009 Michigan turkey hunting season.

Management unit	Interference level (% of hunters) ^a				
	None	Minor	Some irritation	Major problem	No answer
Hunt periods with quotas (General limited quota hunt periods)					
A	71	14	9	3	3
E	81	14	4	1	1
F	66	21	8	3	1
J	72	19	5	2	2
K	64	28	6	0	2
M	76	20	2	1	1
ZA	61	28	8	3	1
ZB	60	29	7	3	2
ZC	57	25	15	1	2
ZD	82	18	0	0	0
ZE	57	27	11	4	2
ZF	57	26	11	4	3
Mean	66	23	7	2	2
Hunt 301 with quota (Private lands in Management Unit ZZ; April 20-May 3, 2009)					
ZA	72	18	6	2	2
ZB	65	20	11	1	3
ZC	70	18	8	1	3
ZD	81	13	6	0	0
ZE	69	17	9	3	2
ZF	68	21	7	2	2
Unknown	74	13	4	4	4
Mean	70	18	8	2	2

^aRow totals may not equal 100% because of rounding errors.

Table 6 (continued). Estimated amount of hunter interference experienced by turkey hunters during the spring 2009 Michigan turkey hunting season.

Management unit	Interference level (% of hunters) ^a				
	None	Minor	Some irritation	Major problem	No answer
Unlimited quota hunt period (Guaranteed Hunt 234; May 4-31, 2009)					
A	75	17	3	2	3
E	71	21	5	2	1
F	72	20	7	1	1
J	82	11	6	1	0
K	68	21	8	0	3
M	80	14	7	0	0
ZA	72	19	5	1	2
ZB	75	18	6	0	1
ZC	68	19	11	0	2
ZD	78	21	1	0	0
ZE	74	18	6	1	1
ZF	73	19	5	1	3
Unknown	75	5	5	4	11
Mean	72	19	6	1	2
Statewide ^b	69	20	7	2	2

^aRow totals may not equal 100% because of rounding errors.

^bStatewide mean interference levels (all hunts and periods).

Table 7. Estimated number of hunting efforts, hunters, hunting success, noninterfered hunters, and hunter rating of the 2009 spring turkey hunting season, by hunt periods.

Variable	Hunt periods beginning								All periods ^a	
	April 20		April 27		May 4		May 11			
	Estimate	95% CL	Estimate	95% CL	Estimate	95% CL	Estimate	95% CL	Estimate	95% CL
Hunting efforts (days)	213,191	6,214	49,524	3,694	170,787	7,291	16,661	3,288	450,163	10,367
Number of hunters	51,759	812	11,962	598	31,615	682	2,620	299	97,956	1,019
Successful hunters (n)	22,001	920	4,864	503	11,855	655	1,013	223	39,733	1,227
Successful hunters (%)	43	2	41	4	37	2	39	7	41	1
Noninterfered hunters (n) ^b	45,595	919	10,912	589	28,569	713	2,286	290	87,362	1,171
Noninterfered hunters (%) ^b	88	1	91	2	90	1	87	5	89	1
Favorable rating (n) ^c	33,887	971	7,222	562	20,045	745	1,749	269	62,904	1,300
Favorable rating (%) ^c	65	2	60	4	63	2	67	7	64	1

^aRow totals may not equal totals for all periods because of rounding errors.

^bProportion of hunters that indicated they experienced no or only minor interference from other hunters.

^cHunters rating their hunting experience as excellent, very good, or good.

Table 8. Comparison of the estimated number of hunters, hunting effort, and harvest between 2008 and 2009 Michigan spring turkey hunting seasons, summarized by regions.

Region ^a	Hunters (No.) ^b					Hunting efforts (days)					Harvest (No.)				
	2008		2009		Change (%)	2008		2009		Change (%)	2008		2009		Change (%)
	Total	95% CL	Total	95% CL		Total	95% CL	Total	95% CL		Total	95% CL	Total	95% CL	
UP	4,506	310	4,504	323	0	22,064	3,062	23,214	3,006	5	1,747	311	1,857	315	6
NLP	30,680	814	29,077	760	-5*	127,200	5,892	132,358	6,298	4	11,492	714	8,900	625	-23*
SLP	60,374	966	62,529	1,003	4*	252,308	7,765	280,180	8,469	11*	28,431	977	28,639	1,038	1
Unknown	2,127	345	3,035	413		8,284	1,796	14,411	2,732		332	137	337	136	
Total	96,557	1,004	97,956	1,019	1	409,857	9,508	450,163	10,367	10	42,002	1,215	39,733	1,227	-5

^aRegions included the Upper Peninsula (UP), the northern Lower Peninsula north of Management Unit ZZ (NLP), and Management Unit ZZ in the southern Lower Peninsula (SLP).

^bNumber of hunters did not add up to statewide total because hunters can hunt in more than one unit for the unlimited quota hunt.

*P<0.005.

Table 9. Comparison of estimated hunter success, hunter satisfaction, and hunt interference between 2008 and 2009 Michigan spring turkey hunting season, summarized by regions.

Region ^a	Hunter success					Hunter satisfaction ^b					Noninterfered hunters ^c				
	2008		2009		Difference (%)	2008		2009		Difference (%)	2008		2009		Difference (%)
	%	95% CL	%	95% CL		%	95% CL	%	95% CL		%	95% CL	%	95% CL	
UP	39	6	41	6	2	66	6	65	6	-2	96	3	96	3	0
NLP	37	2	31	2	-7*	60	2	51	2	-9*	89	1	90	1	2
SLP	47	1	46	1	-1	73	1	71	1	-2	89	1	89	1	0
Total	43	1	41	1	-3*	68	1	64	1	-4*	89	1	89	1	1

^aRegions included the Upper Peninsula (UP), the northern Lower Peninsula north of Management Unit ZZ (NLP), and Management Unit ZZ in the southern Lower Peninsula (SLP).

^bHunters rating their hunting experience as excellent, very good, or good.

^cProportion of hunters that indicated they experienced no or only minor interference from other hunters.

*P<0.005.

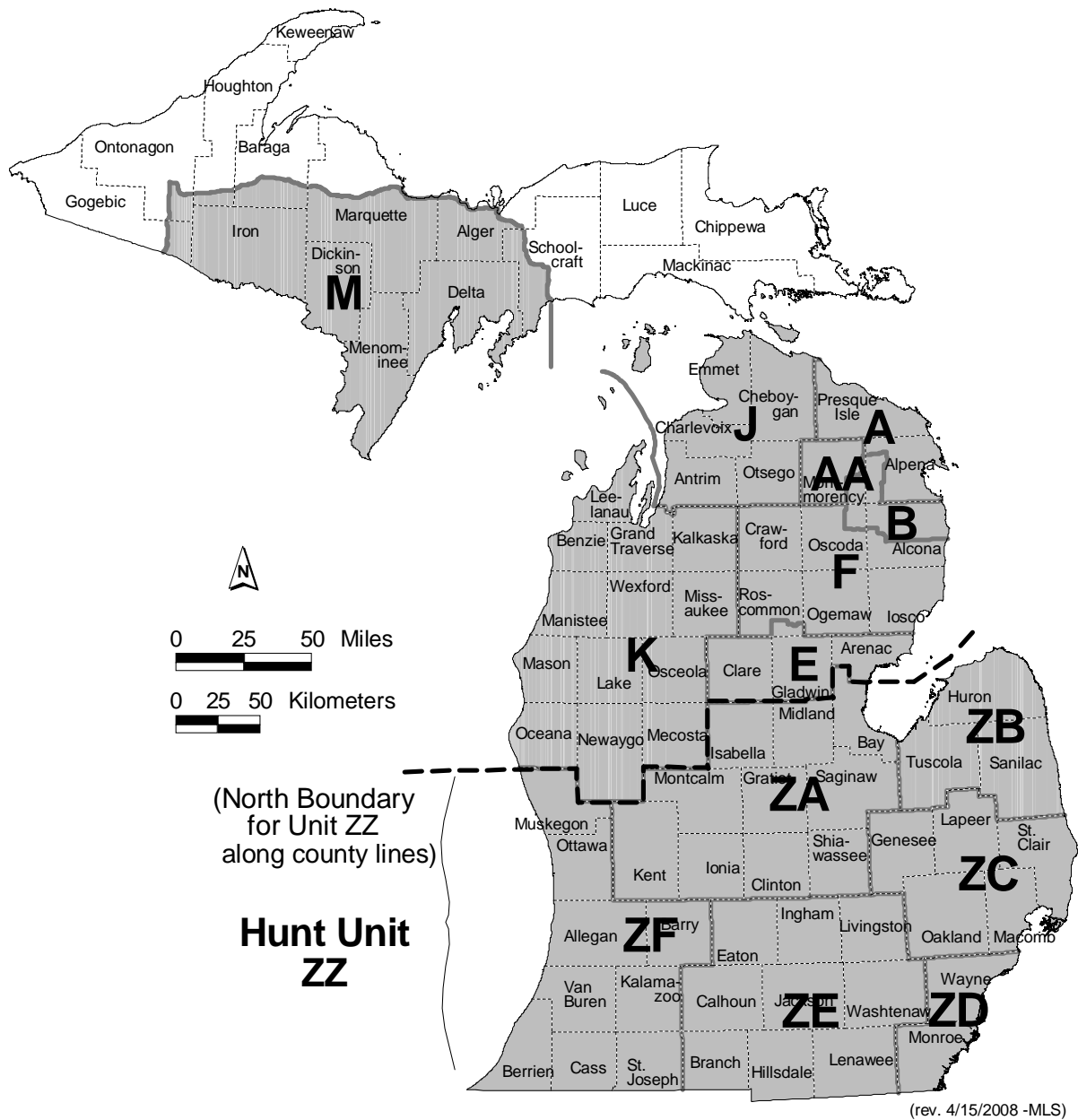


Figure 1. Management units in Michigan open to spring turkey hunting in 2009.

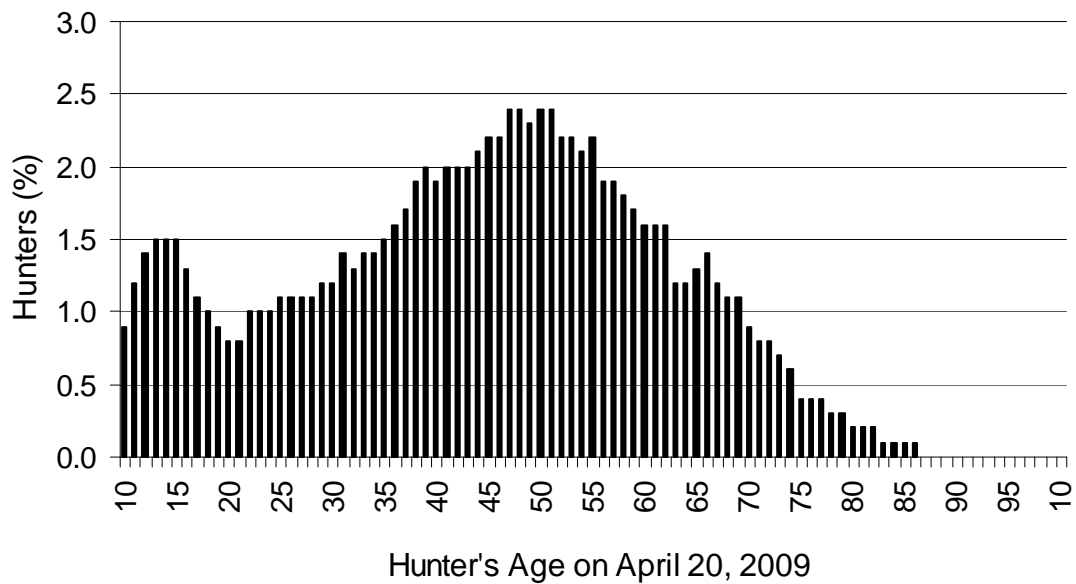


Figure 2. Age of people that purchased a turkey hunting license in Michigan for the 2009 spring hunting season ($\bar{x} = 44$ years). Licenses were purchased by 120,773 people.

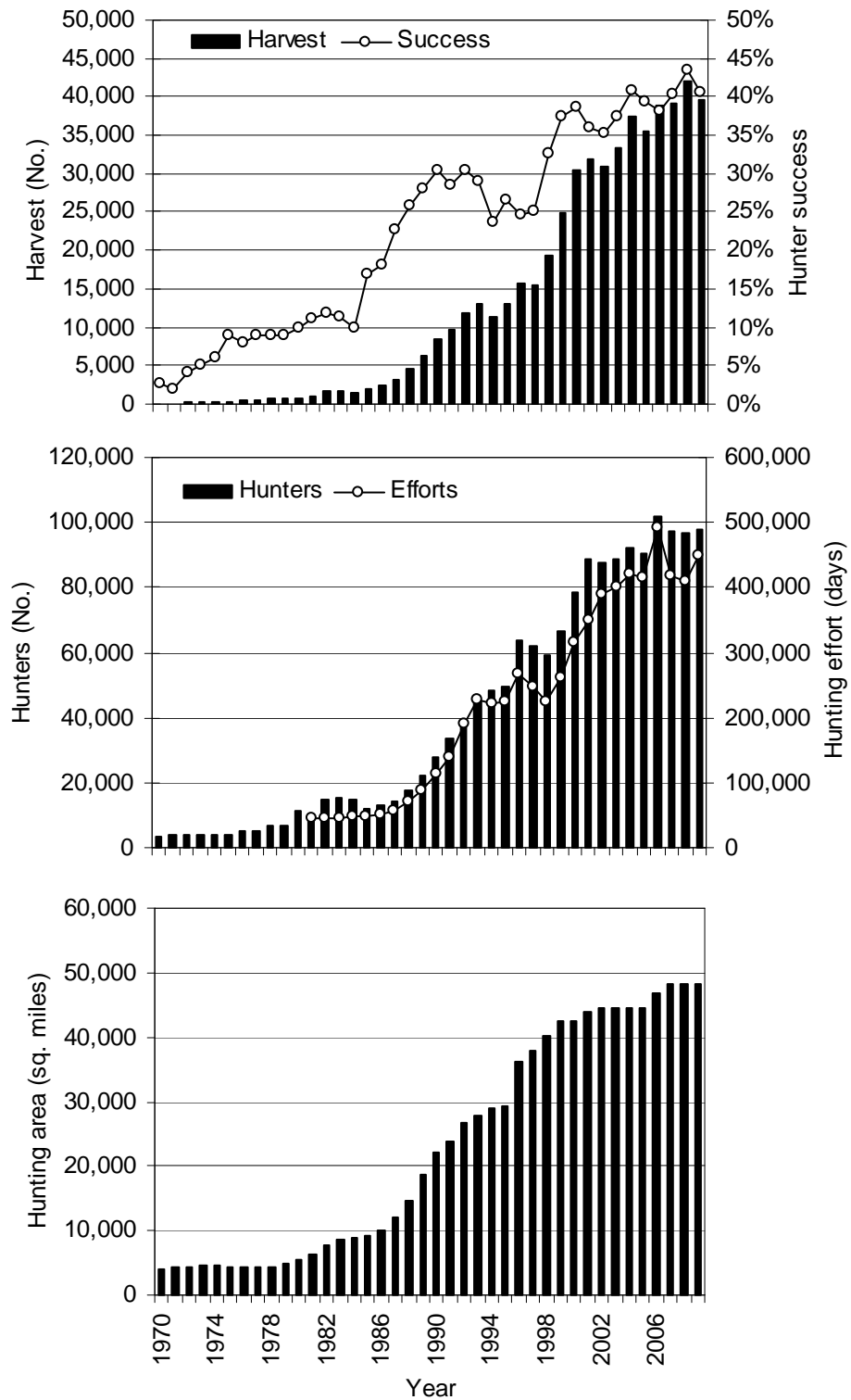


Figure 3. Estimated number of hunters, harvest, hunting efforts, hunter success, and area open to hunting during the Michigan spring turkey hunting season, 1970-2009. Estimates of hunting effort generally were not available before 1981.

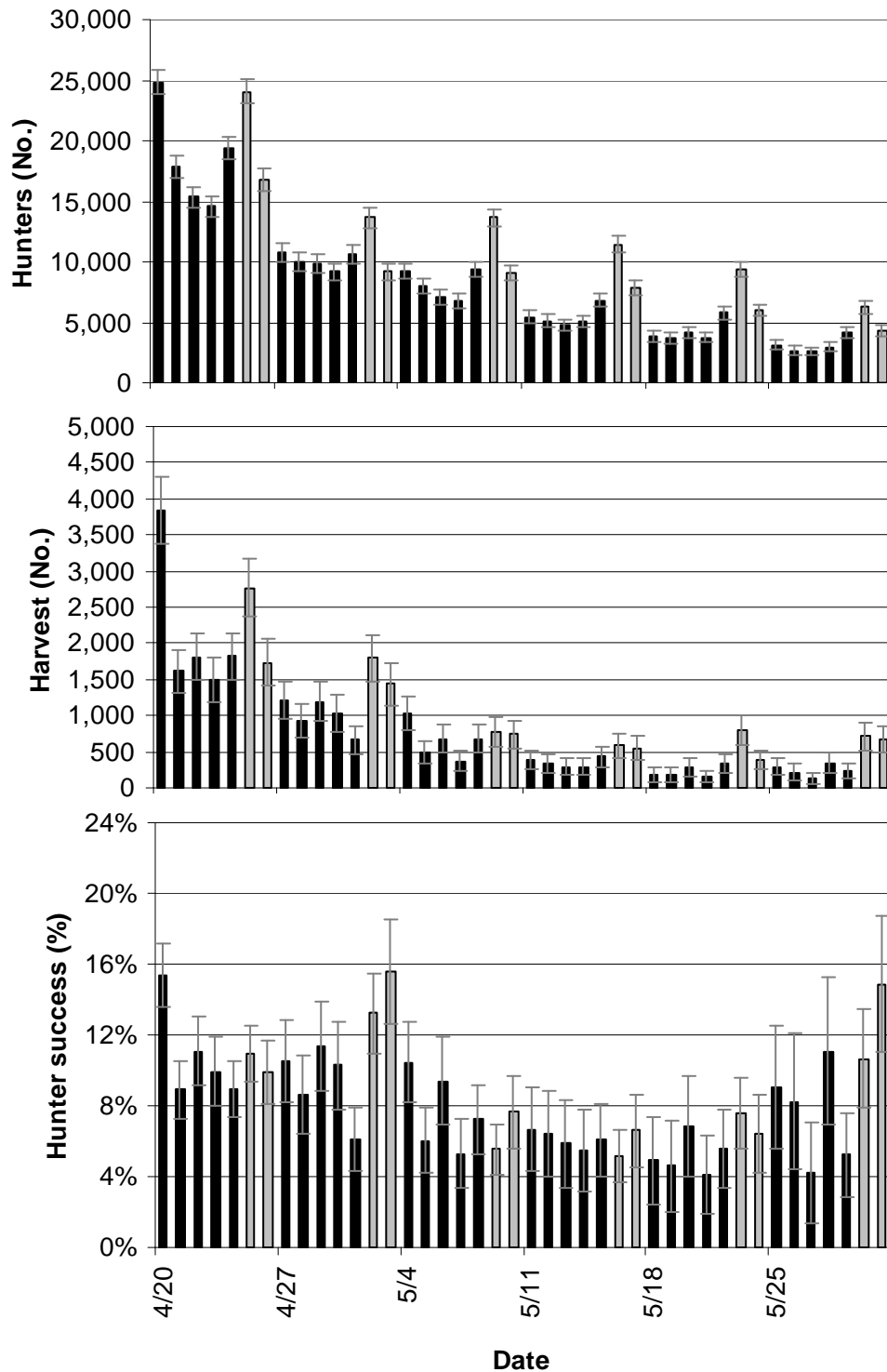


Figure 4. Estimated number of hunters, harvest, and hunter success by date during the 2009 Michigan spring turkey hunting season (includes all hunts). An additional $3,846 \pm 472$ birds were taken on unknown dates. Gray-shaded bars indicate weekends. Vertical bars represent the 95% confidence interval.

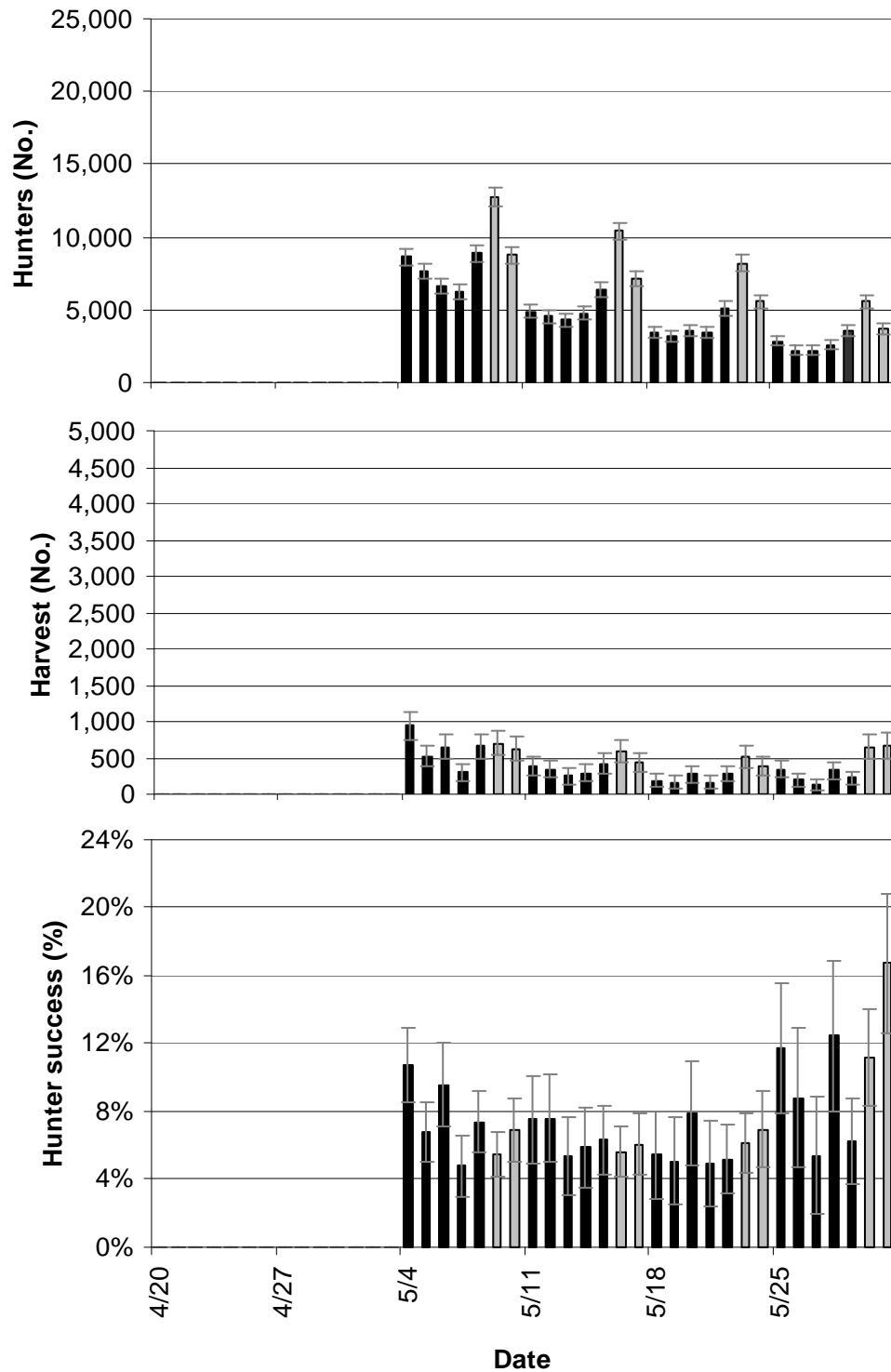


Figure 5. Estimated number of hunters, harvest, and hunter success by date during Hunt 234 of the 2009 Michigan spring turkey hunting season (May 4-31). An additional $1,327 \pm 259$ birds were taken on unknown dates. Gray-shaded bars indicate weekends. Vertical bars represent the 95% confidence interval.

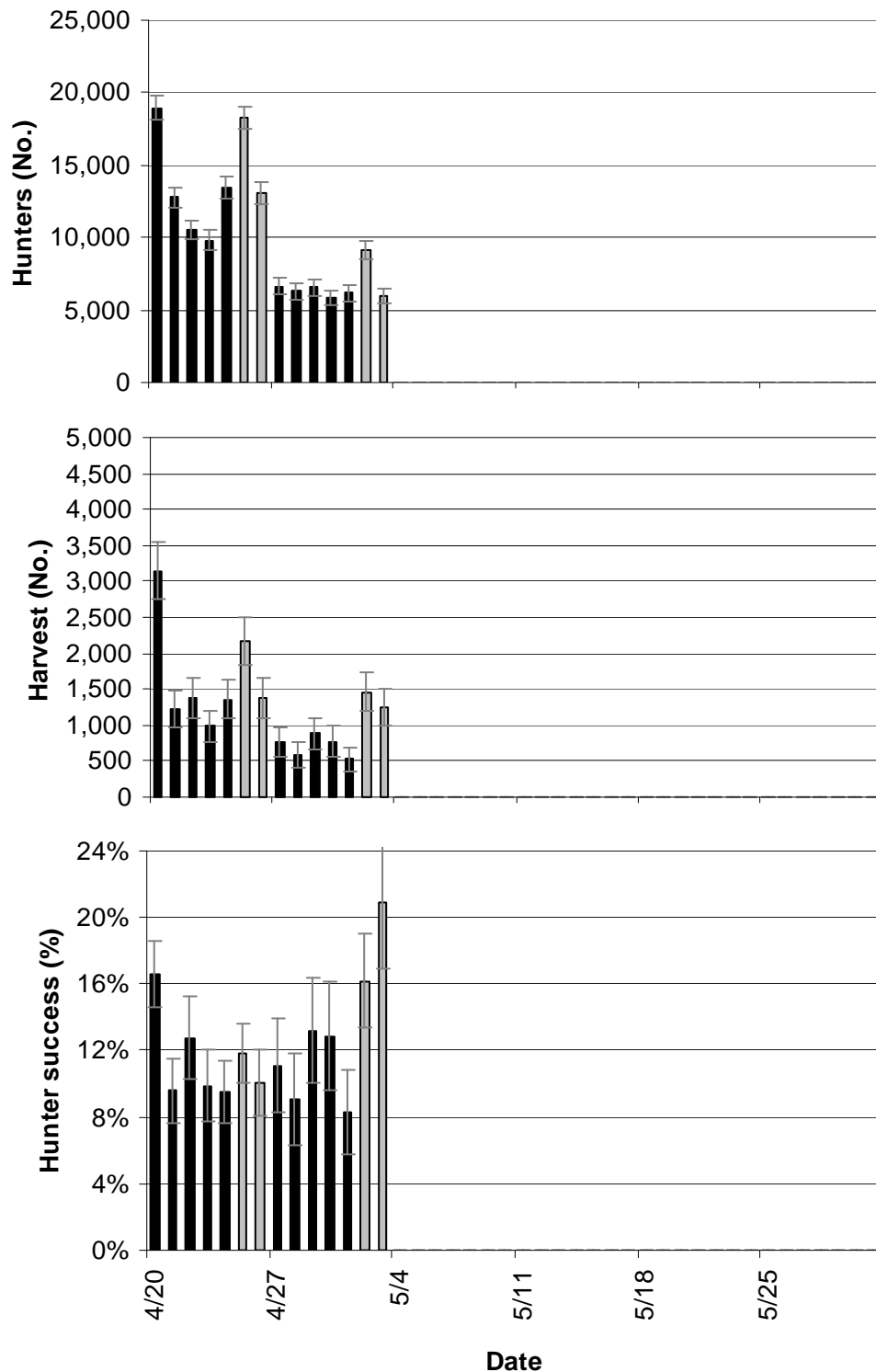


Figure 6. Estimated number of hunters, harvest, and hunter success by date during Hunt 301 of the 2009 Michigan spring turkey hunting season (April 20-May 3). An additional $2,240 \pm 363$ birds were taken on unknown dates. Gray-shaded bars indicate weekends. Vertical bars represent the 95% confidence interval.

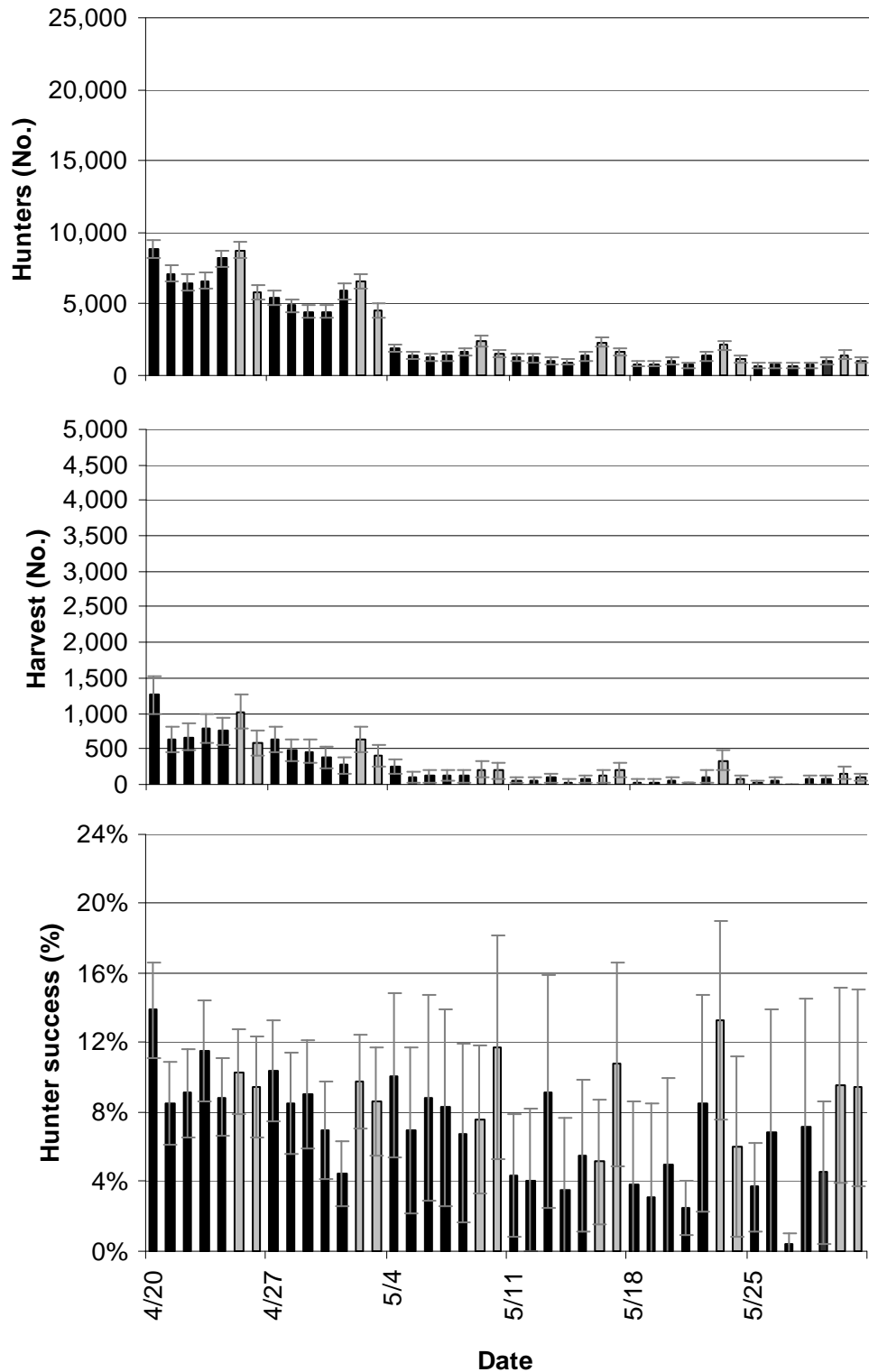


Figure 7. Estimated number of hunters, harvest, and hunter success by date during all hunts, except hunts 234 and 301 of the 2009 Michigan spring turkey hunting season. An additional 390 ± 158 birds were taken on unknown dates. Gray-shaded bars indicate weekends. Vertical bars represent the 95% confidence interval.

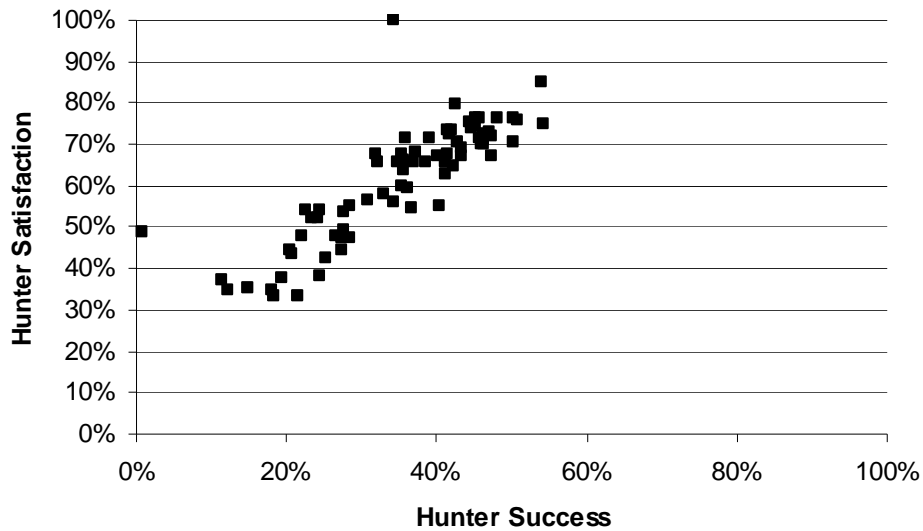


Figure 8. Relationship between hunter satisfaction (expressed as the percentage of hunters rating their hunting experience as excellent, very good, or good) and hunter success for each of 75 counties in Michigan during the 2009 spring turkey hunting season (included only counties with at least 30 hunters).

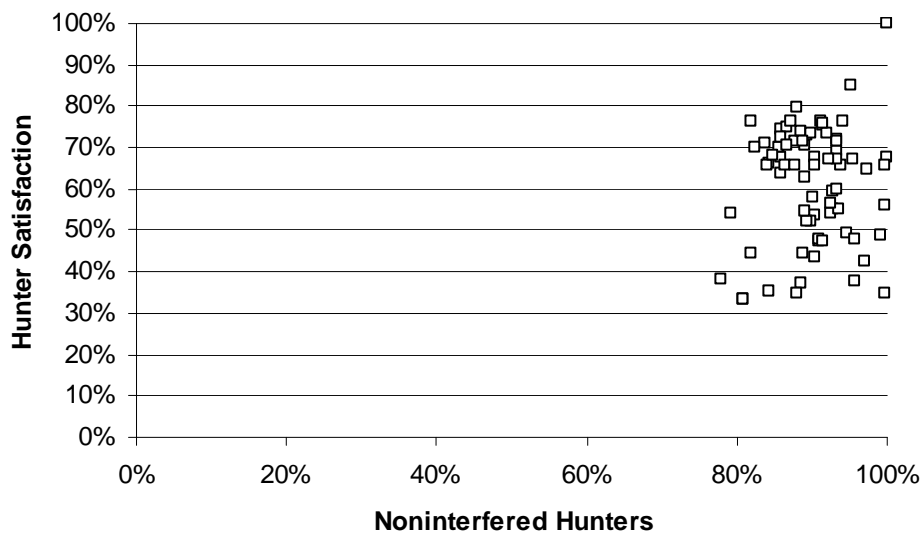


Figure 9. Relationship between hunter satisfaction (expressed as the percentage of hunters rating their hunting experience as excellent, very good, or good) and hunter interference for each of 75 counties in Michigan during the 2009 spring turkey hunting season (included only counties with at least 30 hunters). Noninterfered hunters were the proportion of hunters that indicated that they experienced no or only minor interference from other hunters.